

## ABSTRACT

An optical power equalization method and an optical power equalizer for optical signals traveling upstream in a passive optical network are disclosed. The equalizer includes a wavelength coupler, an optical splitter, an optical detector, an active gain control circuit, a delay element, and an optical amplifier. The wavelength coupler separates an upstream optical signal from a single optical fiber. The optical splitter transfers a part of the optical signal to the optical detector. The optical detector converts the optical signal from the coupler into an electrical signal having an amplitude proportional to the optical signal's intensity. The control circuit controls a driving current to be provided to the amplifier, according to the electrical signal's amplitude. The delay element delays the optical signal by a time required for the optical detector and the control circuit to perform their operation. The amplifier amplifies the optical signal with a gain according to the driving current from the control circuit.